

SPORT SCIENCE & MANAGEMENT
SS3324 SPORT NUTRITION

Academic Year	2025-26	Semester	2
Course Coordinator			
Course Code	SS3324		
Course Title	Sport Nutrition		
Pre-requisites	-		
No of AUs	3		
Contact Hours	39		

Course Aims

This course aims to examine the role of nutrition in supporting the physical and mental performance, growth, and health and fitness of athletes. The course is designed as an upper-level course for undergraduate sport science students. It will cover a range of content related to the energy requirements of athletes, the role of individual macronutrients in assisting performance and growth, the use of micronutrients in supporting athlete health, evidence related to the intake and use of nutritional supplements, the role of sports drinks for athletic performance, eating disorders among athletes, and nutrition to support immune function. Laboratory sessions will provide hands-on opportunities to examine some of these topics, and guest lectures/visits will support the lecture material.

Intended Learning Outcomes (ILO)

By the end of this course, you should be able to:

1. describe and explain the energy requirements of athletes in different sports, including explaining and contrasting the role of carbohydrates and fat in energy supply during exercise.
2. discuss the evidence surrounding the role of protein in growth and repair for athletes and provide recommendations for protein intake in athletes.
3. evaluate the role and discuss evidence surrounding the intake of micronutrients and nutritional supplements for sports performance.
4. appraise the role of sports drinks on sports performance.
5. discuss the effect of eating disorders (relative energy deficiency) on sport performance and athletes' health and how nutritional manipulations can help prevent immunodepression in athletes.

Course Content

The following topics will be covered:

1. Energy requirements of athletes
2. Carbohydrates and energy provision
3. Carbohydrates and sport performance
4. Fats for exercise and sport performance
5. Protein metabolism and requirements for sport
6. Micronutrients for athletes
7. Nutritional supplements
8. Sport drinks
9. Eating disorders (relative energy deficiency) in athletes
10. Nutrients and immune function

NTU Competencies & Graduate Attributes

NTU Competencies	
Character	
Competence	√
Cognitive agility	√

NTU Graduate Attributes	
Graduate Attributes	Level (i.e., basic, intermediate, advanced)
1. Collaboration	Advanced
2. Communication	Advanced
3. Curiosity	Advanced
4. Sense making	Intermediate
5. Project Management	Intermediate

Assessment (includes both continuous and summative assessment)

Component	ILO Tested	Weighting	Team/ Individual	Assessment Rubrics
1. Laboratory assignment	1	25%	Individual 20%/Team 5%	Appendices 1-2
2. Group Presentation	3	25%	Team	Appendices 3-4
3. Final Examination	1-5	50%	Individual	
Total		100%		

Formative Feedback

During lessons, topics will be discussed, and immediate feedback will be provided on thoughts shared. In addition, written feedback will be provided on the laboratory assignment and team presentation completed. This will include the strengths as well as areas for improvement. For the written examination, written generic feedback will be posted in NTULearn after the examination for all students, along with the median course grade. You can also seek feedback on your performance from the course instructor as required.

Learning and Teaching Approach

Approach	How does this approach support you in achieving the learning outcomes?
Lectures	Lectures will provide information for key learning concepts and theories and support understanding of key concepts.
Laboratories	Laboratories will: <ul style="list-style-type: none">• Give hands-on experiential learning to support key theories and information provided in class.• Provide tasks for you to utilise what you have recently learned to solve specific problems.• Give space and time for small group activities and discussions to allow you to assimilate the content and for sharing learning.• Allow opportunity for verbal feedback from the instructor on techniques and material.
Blended Learning	Time will be given for learning from online materials as a part of the flipped teaching approach. These materials will support key concepts covered in lectures and laboratories.

Reading and References

NIE Research and Publications

1. Teo, C.J.H., Burns, S.F., Kawabata, M. (2023). Developing nutrition knowledge and attitude measures for athletes with the Knowledge-Attitude-Behaviour model. *Research Quarterly for Exercise and Sport*. 94(1):110-117. doi: 10.1080/02701367.2021.1942771.
2. Wong, T.H., Sim, A., Burns, S.F. (2022). The effect of beetroot ingestion on high-intensity endurance time-trial performance: a systematic review and meta-analysis. *Journal of Exercise Science & Fitness*. 20(4):305-316. doi: 10.1016/j.jesf.2022.06.004.
3. Tan, Z.S., Sim, A., Kawabata, M., Burns, S.F. (2021). A systematic review of the effects of caffeine on basketball performance. *Biology (Basel)*. 11(1):17. doi: 10.3390/biology11010017.
4. Wong, T.H., Sim, A., Burns, S.F. (2021). The effect of beetroot ingestion on high-intensity interval training: A systematic review and meta-analysis. *Nutrients*. 13(11):3674. doi: 10.3390/nu13113674.
5. Sim, A., Burns, S.F. (2021). Review: questionnaires as measures for Low Energy Availability (LEA) and Relative Energy Deficiency in Sport (RED-S) in athletes. *Journal of Eating Disorders*. 9(1):41. doi: 10.1186/s40337-021-00396-7.
6. Fan, P.W., Burns, S.F., Lee, J.K.W. (2020). Efficacy of Ingesting a Novel Rehydration Solution after Exercise on Fluid Balance and Endurance Performance. *Nutrients*. 12(12):3826. doi: 10.3390/nu12123826.

7. Chia, J.S., Barrett, L.A., Chow, J.Y., Burns, S.F. (2017). Effects of caffeine supplementation on performance in ball games. *Sports Medicine*. 47(12):2453-2471. doi: 10.1007/s40279-017-0763-6.

Other Readings and References

Recommended texts:

8. Jeukendrup, A., & Gleeson, M. (2019). *Sport Nutrition*. 3rd Edition. Human Kinetics. ISBN: 9781492529033.
9. McArdle, W.D., Katch, F.I., & Katch, V.L. (2022). *Exercise Physiology: Nutrition, Energy, and Human Performance*. 9th Edition. Lippincott Williams & Wilkins. ISBN: 9781975160043.
10. Powers, S.K., Howley, E.T. & Quindry, J. (2021). *Exercise Physiology: Theory and Application to Fitness and Performance*. 11th Edition. McGraw-Hill. ISBN: 9781260570922.

Course Policies and Student Responsibilities

(1) General

You are expected to complete all assigned pre-class readings and activities, attend all classes – lecture and laboratory - punctually submit all scheduled assignments and take tests by due dates. You are not allowed to swap laboratory groups without express permission from the course coordinator. You are expected to take responsibility to follow up with course notes, assignments and course-related announcements for sessions they have missed. You are expected to participate in all discussions and class activities unless there is a valid medical reason not to do so.

(2) Absenteeism

Absence from class without a valid reason will affect your overall course grade. Valid reasons include falling sick, supported by a medical certificate and participation in NTU's approved activities supported by an excuse letter from the relevant bodies.

If you miss a lecture, you must inform the course instructor via email prior to the start of the class.

(3) Absence Due to Medical or Other Reasons

If you are sick and not able to complete a test or submit an assignment, you have to submit the original Medical Certificate (or another relevant document) to the Sport Science & Management (or Home School) administration to obtain official leave. Without this, the missed assessment component will not be counted towards the final grade. There are no make-ups allowed.

(4) Attire and safety

You are expected to participate in practical laboratory activities. Some of these activities involve exercise. You are expected to wear appropriate attire for participation, obey laboratory safety rules, and take appropriate care of and return all equipment after use.

Academic Integrity

Good academic work depends on honesty and ethical behaviour. The quality of your work as a student relies on adhering to the principles of academic integrity and to the NTU Honour Code, a set of values shared by the whole university community. Truth, Trust and Justice are at the core of NTU's shared values.

As a student, it is important that you recognise your responsibilities in understanding and applying the principles of academic integrity in all the work you do at NTU. Not knowing what is involved in maintaining academic integrity does not excuse academic dishonesty. You need to actively equip yourself with strategies to avoid all forms of academic dishonesty, including plagiarism, academic fraud, collusion, and cheating. If you are uncertain of the definitions of any of these terms, you should go to the [NTU Student Academic Integrity Policy and Procedures link](#) in the Student Portal for more information. Consult your instructor(s) if you need any clarification about the requirements of academic integrity in the course.

Special note: Generative AI tools will be allowed to the extent stipulated for each assignment in the assignment instructions, and any such use must be duly referenced or disclosed.

Course Instructors

Instructor	Office Location	Phone	Email
TBA			

Planned Weekly Schedule

Week	Topic	ILO	Readings/ Activities
1	Introduction to nutrition Laboratory assignment – handout Group presentation - handout	1 – 5	Jeukendrup & Gleeson Chapters 1-2
2	Energy requirements of athletes Laboratory assignment – Fingertip blood sampling	1	Jeukendrup & Gleeson Chapters 3-4
3	Carbohydrates and energy provision Laboratory assignment – data collection	1	Jeukendrup & Gleeson Chapter 6
4	Carbohydrates and sport performance	1	Jeukendrup & Gleeson Chapter 6
5	Fats for exercise and sport performance Laboratory assignment – data collection	1	Jeukendrup & Gleeson Chapter 7
6	Protein metabolism and requirements for sport	2	Jeukendrup & Gleeson Chapter 8

	Laboratory assignment – data collection		
7	Laboratory Assignment completion	1	NA
Recess Week			
8	Group presentations	3	
9	Micronutrients for athletes Nutritional supplements Laboratory assignment – hand in	3	Jeukendrup & Gleeson Chapters 10-11
10	Sport drinks Laboratory: Devising meals for athletes	4	Jeukendrup & Gleeson Chapter 9
11	Eating disorders (relative energy deficiency) in athletes No Lab	5	Jeukendrup & Gleeson Chapter 15-16
12	Nutrients and immune function Guest Presentation: TBC No Lab	5	Jeukendrup & Gleeson Chapter 13
13	Revision – Q&A Session	1 – 5	

Appendix 1: Assessment Criteria for Laboratory Assignment (25% Final Grade – 80% of assignment grade marked out of 100)

	A+, A, A-	B+, B	B-, C+, C	D+, D	F
Individual: Structure and clarity of writing & presentation (max 20)	Well structured. Very minor grammatical and spelling errors. Table and/or figures are well presented.	Some improvement in structure is possible. Few grammatical and spelling errors. Tables and/or figures are well presented.	Improvement in structure is needed. Obvious grammatical and spelling errors. Tables and figures need improving.	Poor structure. Many spelling and grammatical errors. Poor presentation of tables and figures.	Coherent structure absent. Copious spelling and grammatical errors. Very poor presentation of tables and figures.
Individual: Introduction, background, aims, hypotheses and objectives (max 20)	Background statement of the problem is clearly defined. Aim clear.	Background statement of the problem is mostly clear. Small improvement in defining the aim of the study is needed.	Background statement of problem and aim need some obvious improvements.	Background statement and aim are only somewhat clear.	Background statement and aim unclear.
Individual: Methods (max 20)	Comprehensive description of methods.	Good description of methods with few errors.	Methods described but with some errors or omissions.	Methods described as difficult to follow and omissions.	Little coherent description of the methods.
Individual: Data analysis and interpretation (max 20)	Appropriate data analysis applied and interpretation of results.	Good data analysis and interpretation of results with few errors.	Incorrect data analysis in parts and interpretation of results incorrect or inappropriate in parts.	Poor data analysis and interpretation of results.	Inappropriate or very poor data analysis and interpretation of results.
Individual: Discussion and concluding remarks (max 20)	Conclusion(s) clearly related to results.	Conclusion(s) clear with small errors.	Some conclusion(s) are not supported by study results.	Conclusion(s) generally inappropriate or incorrect.	Conclusion(s) unclear, poor and inappropriate.

Appendix 2: Assessment Criteria for Laboratory Assignment (25% Final Grade – 20% of assignment grade marked out of 100)

	A+, A, A-	B+, B	B-, C+, C	D+, D	F
Contribution to data collection and report (max 50)	Individual made a strong contribution to all aspects of data collection and development of the report.	Individual made worthwhile contributions to most aspects of data collection and development of the report.	Individual contributed to some aspects of data collection and development of the report.	Individual made minor contributions to data collection and development of the report.	Individual made little or no contribution to data collection and development of the report.
<i>Insert name of team member*</i>					
<i>Insert name of team member*</i>					
<i>Insert name of team member*</i>					
<i>Insert name of team member*</i>					
<i>Insert name of team member*</i>					
<i>Insert name of team member*</i>					
Teamwork (50)	Individual worked constructively and collaboratively with all other team members.	Individual worked constructively and collaborated well with other team members most of the time.	Individual was constructive and collaborated well with other team members some of the time.	Individual was rarely constructive or collaborative in working with other team members.	Individual was unable to be constructive or collaborate well with other team members.
<i>Insert name of team member*</i>					
<i>Insert name of team member*</i>					

<i>Insert name of team member*</i>					
<i>Insert name of team member*</i>					
<i>Insert name of team member*</i>					
<i>Insert name of team member*</i>					
<i>*Other team members to collectively mark X in box next to evaluation for team members' name.</i>					

Appendix 3: Assessment Criteria for Group Presentation (25% Final Grade – 80% of assignment grade marked out of 100)

	A+, A, A-	B+, B	B-, C+, C	D+, D	F
Structure and clarity of presentation slides (max 25)	Well structured. Free of grammatical and spelling errors. Tables, figures and pictures are all clear and well-presented.	Some improvement in structure is possible. Few grammatical and spelling errors. Tables, figures and pictures are all well presented.	Improvement in structure is needed. Obvious grammatical and spelling errors. Table, figures, and pictures need improving.	Poor structure. Many spelling and grammatical errors. Poor presentation of tables, figures and pictures.	Coherent structure absent. Copious spelling and grammatical errors. Very poor presentation of tables, figures and pictures.
Presentation (max 25)	Very clear presentation style with clear explanations and good use of voice. All team members contributed with good teamwork and smooth transition among group members.	Only minor improvements to the presentation or explanations are needed. Some improvement in teamwork and transition is needed.	Some explanations are unclear. Contribution by team members is not spread very evenly, and transition among team members needs obvious improvement at times.	Improvements in many explanations are needed. Contributions by team members differed substantially, and transitions were not well linked.	Very poor presentation and no clear explanations provided. Only 1-2 team members contributed, with very poor linkage among members.
Information (max 25)	Clear background to supplement provided and the major evidence related to use in athletes covered.	Only minor improvements are needed in background information and the areas related to use in athletes.	Obvious improvements needed in background information and the areas related to use in athletes.	Many improvements needed in background information and the areas related to use in athletes.	Little coherent description of supplement background or evidence for its use in athletes.
Ability to answer questions (max 25)	Well-considered, clear and good answers given to questions.	Answers provided are generally well-considered and clear.	Obvious improvements needed in the clarity of the answers provided.	Poor answers provided to questions.	Unable to answer questions.

Appendix 4: Assessment Criteria for Group Presentation (25% Final Grade – 20% of assignment grade marked out of 100)

	A+, A, A-	B+, B	B-, C+, C	D+, D	F
Contribution to presentation development and delivery (max 50)	Individual made a strong contribution to all aspects of the development and delivery of presentation.	Individual made worthwhile contributions to most aspects of the development and delivery of presentation.	Individual contributed to some aspects of the development and delivery of presentation.	Individual made minor contributions to the development and delivery of presentation.	Individual made little or no contribution to the development and delivery of presentation.
<i>Insert name of team member*</i>					
<i>Insert name of team member*</i>					
<i>Insert name of team member*</i>					
<i>Insert name of team member*</i>					
<i>Insert name of team member*</i>					
<i>Insert name of team member*</i>					
Teamwork (50)	Individual worked constructively and collaboratively with all other team members.	Individual worked constructively and collaborated well with other team members most of the time.	Individual was constructive and collaborated well with other team members some of the time.	Individual was rarely constructive or collaborative in working with other team members.	Individual was unable to be constructive or collaborate well with other team members.
<i>Insert name of team member*</i>					
<i>Insert name of team member*</i>					

<i>Insert name of team member*</i>					
<i>Insert name of team member*</i>					
<i>Insert name of team member*</i>					
<i>Insert name of team member*</i>					
<i>*Other team members to collectively mark an X in the box next to evaluation for team members name.</i>					